

NOTES ON SCIRPUS AND DESCRIPTIONS OF THREE NEW SPECIES.

By

MARGARET R. LEVYNS.

Scirpus is well represented on the Cape Peninsula and recent work on the genus has shown that at least twenty-eight species occur within the area. A comparison of the list of species being drawn up at the present time with that of Bolus and Wolley-Dod published in 1904 reveals points of interest. Of the twenty-one species given there only fifteen remain unaltered in the new list. *S. bulbiferus* Boeck., *S. Isolepis* Boeck. and *S. Dregeanus* C.B.Cl. are omitted as the evidence for their inclusion is insufficient to justify their retention. The names of three species have been changed. Ten species have therefore been added to the flora of the Cape Peninsula, but of these only three are new. In the following account the new species are described and notes are given in explanation of the changes that are being made in the genus.

Scirpus striatus (Nees) Fourcade and ***Scirpus rubicundus*** (Nees) Levyns comb. nov.

Two species belonging to the subgenus *Fluitantes* have been imperfectly understood. One of these is fairly common, occurring both in shallow pools and along the margins of streams from sea level to the summit of Table Mountain. It appears to have a preference for acid soils. The other species is more restricted in its range and has only been recorded in temporary pools at low elevations. The soil on which it grows near Muizenberg vlei is very alkaline, with a PH. value between 8.5 and 9.0. This factor probably determines its distribution, as the writer has only found this species on soils of the same type. The first of these species was placed by Bolus and Wolley-Dod in *S. capillifolius* Parl. This name, however, is not the earliest one available, as Nees von Esenbeck described this species as *Eleogiton striatus* in 1836. The combination *S. striatus* has been made by Fourcade (Trans. Roy. Soc. S. Afr. XXI, p. 76, 1934). The reference there should read: "Nees in *Linnaea* X, p. 165, 1836," as no description of this species was published prior to this date. The other and less common species has puzzled many workers

in the genus. C. B. Clarke named Wolley-Dod 3551 from Muizenberg *S. tenuissimus* Boeck., and it appeared under this name in Bolus and Wolley-Dod's list. It is clearly a misidentification. In 1922 Schönland (South African Cyperaceae. Bot. Surv. S. Afr. Memoir No. 3) placed it under *S. globiceps* C.B.Cl. There can be little doubt, however, that this

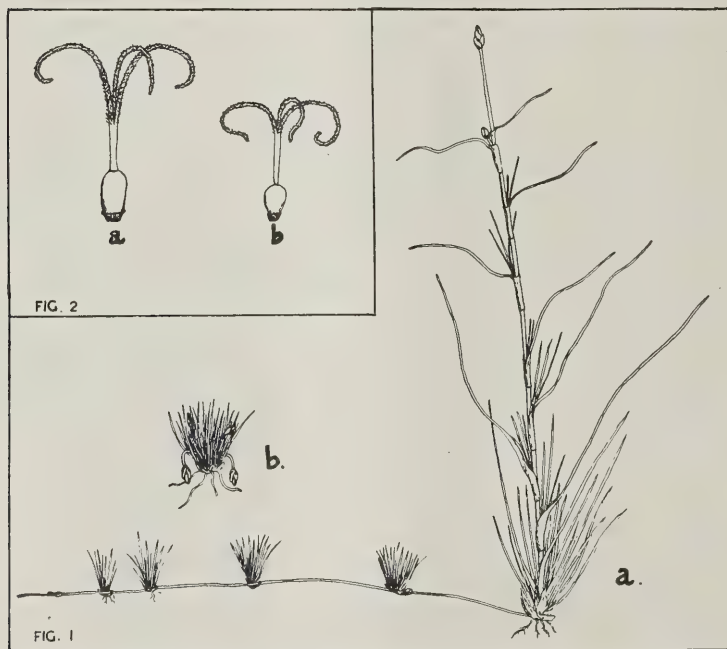


FIG. 1. *Scirpus rubicundus*. (a) Plant in August showing an erect shoot bearing spikelets and an old horizontal shoot bearing tufts of dead leaves. $\times \frac{3}{4}$. (b) A small tuft early in July, showing spikelets. The peduncles of the older spikelets have turned downwards. $\times \frac{3}{4}$.

FIG. 2. Gynaecium showing the basal disc in (a) *S. Ecklonii* and (b) *S. nodosus*. $\times 7\frac{1}{2}$.

plant was first described as *Eleogiton rubicundus* Nees (Linnaea X, p. 164, 1836). A new combination *S. rubicundus* is therefore proposed.

During their main flowering seasons these two species are not unlike in general aspect, though *S. rubicundus* usually has smaller spikelets, which are deep red in colour. *S. striatus* may or may not have this red coloration. The fruit, however, will always serve to separate the two. In both it is somewhat compressed, but viewed from the front *S. striatus*

is oblong, occasionally slightly narrowed at the base, whereas a corresponding view of *S. rubicundus* shows the outline to be circular or nearly so. The surface of *S. striatus* is marked by a number of fine longitudinal lines. In *S. rubicundus* the surface is smooth.

Recently some interesting seasonal changes have been recorded in *S. rubicundus*. Early in June, 1924, Mr. M. H. Giffen collected a small tufted *Scirpus* growing in damp mud on the Cape Flats. A month later the writer found the same species on the Fish Hoek Flats. A striking peculiarity of this apparently new species was that it buried its solitary red spikelets in the mud during the fruiting stage. Specimens (Levy's 841) were sent to Kew, where it was regarded as a new species. Fortunately its description was never published, as it now appears that it is a seasonal form of *S. rubicundus*.

While studying the so-called new species a few months ago the writer realised that its spikelet was identical with that of *S. rubicundus* and re-examination of the original localities was clearly desirable. Unfortunately that at Fish Hoek has been completely altered by the establishment of a dairy farm. Mr. Giffen, however, remembered the exact spot on the Cape Flats where he had found his plants, and he and the writer visited the place in July, 1943, finding the natural vegetation much as it had been nineteen years earlier. Careful examination of the small tufts soon showed that they were connected in series by means of runners which were easily broken. A runner of this type is shown at the left of Fig. 1a. On tracing the runners back to their points of origin it was seen that the parent tufts had longer leaves and looked like *S. rubicundus*. Material was collected and brought in to the University of Cape Town, where it has been grown. At the present time (October) it is producing typical spikelets of *S. rubicundus*, such as are shown in Fig. 1a, and there can be no doubt that one species only is involved. In July of this year no evident spikelets were seen, but on dissecting the tufts ripening fruits were found among the leaf bases.

The annual cycle of this species can therefore be summarised as follows: Active growth in one of the larger tufts begins during the winter months while the plant is completely submerged in water. A long stem with well marked nodes and inter-nodes is put up, and at the end of this one or more fairly stout peduncles are produced, each ending in a solitary spikelet which projects above the surface of the pool. (Fig. 1a.) As the water in the pool begins to dry up axillary clusters of short leaves develop at each node, and by the time the pool is dry these branches, with their axillary tufts now completely developed, will be found sprawling on the surface of the mud. Roots develop at many of the nodes, so that during the summer months what had been a pool a

few months earlier is bright green with the numerous short leaves on these interlacing branches. The majority of the small tufts last for one season only, but occasionally one grows more vigorously than its fellows and produces larger leaves. This has the power, also retained by the original tuft, of producing new branches during the next season. Soon after the winter rains have started, but before pools have been formed, the small tufts bear spikelets of the type shown in Fig. 1b. With the formation of fruit the life of these tufts is ended and next season only their dead remains will be found attached to the parent tuft.

Scirpus antarcticus L. and *Scirpus cartilagineus* (R. Br.) Poir.

In most South African collections of *Scirpus* two very distinct plants are included in *S. antarcticus* L. Both occur on the Cape Peninsula, one being very much more common than the other. The larger and the less common one is the plant to which Linnaeus gave the name *antarcticus*. This differs from the smaller plant in several features, leaving little doubt that they are distinct species and consequently another name must be found for the smaller. *S. cartilagineus* (R. Br.) Poir. is the earliest valid name. The differences between the two are tabulated below :

<i>S. antarcticus.</i>	<i>S. cartilagineus.</i>
Plant about 20 cm. high.	Plant 10 cm. high or less.
Leaf sheaths rather loose.	Leaf sheaths firm.
Spikelets in a cluster, numerous, usually over 50.	Spikelets few in a cluster, rarely more than 8.
Fruit relatively smaller, faces always smooth.	Faces of the fruit usually covered with raised points or faint transverse lines, occasionally smooth.

It is possible that more than one species is included in *S. cartilagineus*. Like most widespread and abundant species it is extremely polymorphic and it would be rash to create several new species without careful study. Work on this problem is in progress.

***Scirpus Thunbergianus* (Nees) Levyns comb. nov.**

C. B. Clarke (Flora Capensis, Vol. VII, p. 227) described this plant as *S. Holoschoenus* L. var. *Thunbergii* C.B. Cl. It differs from the Linnaean species in the characters given below and it is clear that the differences are far too great for mere varietal status. The leaf blade is completely absent or reduced to a small point, the peduncles are flattened, the bracts subtending the inflorescence are small (i.e. they are shorter than the

majority of the stalked clusters of spikelets), and the lowest does not form an apparent continuation of the peduncle. The fertile bracts are entirely glabrous and have a fairly wide papery margin in the upper half, while the midrib projects as a small point.

This plant cannot be raised to specific rank under the name *S. Thunbergii* (Schrad.) Boeck. as the epithet *Thunbergii* was given to another plant by A. Sprengel in 1828. Nees von Esenbeck regarded it as a distinct species under the name *Isolepis Thunbergiana* (Linnaea VII, p. 508, 1832), and the new combination *S. Thunbergianus* is now proposed.

***Scirpus chlorostachyus*, Levyns nom. nov.**

C. B. Clarke regarded this plant as a variety of *S. cernuus* Vahl (Flora Capensis, Vol. VII., p. 220). It seems, however, to merit specific rank and as none of the existing epithets which have been applied to it can be used legitimately in its new rank, the name *S. chlorostachyus* is adopted.

***Scirpus nanodes*, Levyns nom. nov.**

This plant has hitherto been known as *S. tenuis* Spreng. Unfortunately Willdenow had already used the epithet for a different species (Enum. Hort. Berol. p. 76) and as none of the other epithets applied to this plant in the past can be used legitimately in *Scirpus* a new one has to be found.

S. digitatus (Schrad.) Boeck.

This species is usually cited as *S. flaccifolius* Steud. but the name *digitatus* has priority.

***Scirpus Ecklonii* Steud.**

Scirpus and *Ficinia* are separated from one another largely by the presence of a lobed disc at the base of the ovary in the latter. The disc enlarges as the fruit ripens and falls with it. The two genera are obviously very closely related and the correct assignment of certain species raises very real difficulties. A case in point is the plant called by Nees von Esenbeck *Ficinia Ecklonea* and by Steudel *Scirpus Eckloneus*. This plant has a small disc at the base of the ovary (Fig. 2a) but this structure does not persist in the fruit, shrivelling up as development proceeds. In the writer's opinion it is desirable to follow Steudel here, for despite the small disc the other characters indicate relationship between this species, *S. membranaceus* Thunb. and *S. nodosus* Rottb. In *S. membranaceus* no trace of a disc is to be seen but in *S. nodosus* there is often a disc quite as obvious as that of *S. Ecklonii* (Fig. 2b). All taxonomists know that reliance on one character alone for

purposes of classification is apt to be misleading, and this is particularly true of these two Cyperaceous genera.

Scirpus nodosus Rottb.

In this species plants are of two kinds, (a) those with normal bisexual flowers and (b) those with female flowers only. Abortive anthers are present in the female flowers. Both types of plant occur growing together in several places on the Cape Peninsula where the species is common.

NEW SPECIES.

Scirpus delicatulus, Levyns sp. nov. (Fig. 3).

Herba perennis. *Caulis* repens, debilis, internodis elongatis. *Folia* capillaria. *Spicula* angusta, solitaria, terminalia. *Bractea* scariosae, obtusae. *Stamina* 3. *Rami styli* 3. *Nux* triquetra, levis.

A submerged water plant. Stem weak and creeping, rooting at the nodes, producing a few very slender leaves and peduncles at each node. Leaves capillary, channelled, up to 18 cm. long, usually shorter than the peduncles. Peduncles a little stouter than the leaves, each bearing a single, terminal spikelet. Spikelet narrowly ellipsoidal, 6 mm. long or less, consisting of few to several bracts, frequently all fertile or the lowest one or two sterile. Bracts thin, concave, obtuse, greenish in the centre, with a reddish, translucent margin. Stamens 3. Style branches 3. No completely ripe fruit seen. In the ripest available the fruit was three angled but not acutely so and the faces were smooth and dull yellow-brown in colour.

Hab. Cape Peninsula : *Levyns* 6345. Kenilworth Racecourse. (*Type*, in the Bolus Herbarium.) This species has also been collected at Fish Hoek ; *Levyns* 837.

Scirpus inconspicuus Levyns sp. nov. (Fig. 4).

Herba annua, minuta, simplex. *Folia* gracilia. *Spicula* solitaria, terminalia. *Bractea* 2 vel 3, foliaceae. *Stamina* 3. *Antherae* breves. *Stylus* brevissimus, ramis 3. *Nux* tenuis, elongata, subtriquetra.

A minute annual, 2—3 cm. high. Leaves slender, equalling or shorter than the inflorescence, sheaths red, firm. Spikelets narrow, solitary, terminal, bearing 1—3 flowers, all the bracts usually fertile. Bracts reddish at the base, with a free leaf-like tip. Stamens 3, anthers very much shorter than the filament at maturity. Style branches 3, free almost to the base. Fruit long and slender, faintly three angled, pale brown.

Hab. Cape Peninsula : *Levyns* 6777. (*Type*, in the Bolus Herbarium.) Muddy places on Paarden Island, forming a turf along tidal channels.

Flowering season : Aug.—Sept.

***Scirpus brevicaulis* Levyns sp. nov. (Fig. 5.)**

Herba annua, caespitosa, minuta. *Folia* quam *spicula* subsessilia longiora. *Spicula* numerosa, conferta. *Bractae* foliaceae, numerosae. *Stamina* 2 vel rarius 3. *Stylus* brevissimus, ramis 2. *Nux* complanata, punctata.

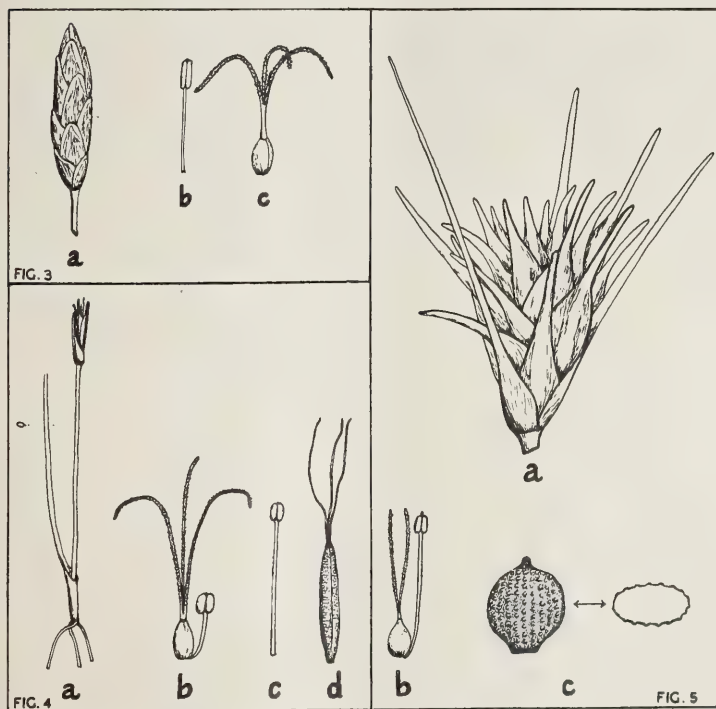


FIG. 3. *Scirpus delicatulus*. (a) External view of the spikelet. $\times 5$. (b) A single stamen at the time of dehiscence. $\times 6$. (c) Gynoecium. $\times 6$.
 FIG. 4. *S. inconspicuus*. (a) Whole plant. $\times 2$. (b) Gynoecium and young stamen. $\times 9$. (c) Stamen at the time of dehiscence. $\times 9$. (d) Fruit, nearly ripe. $\times 9$.
 FIG. 5. *S. brevicaulis*. (a) External view of a spikelet. $\times 5$. (b) Gynoecium and a single stamen at the time of dehiscence. $\times 10$. (c) Fruit seen from the front; the outline of a cross section is shown next to it. $\times 20$.

A minute, densely tufted annual, 2 cm. high or less. Leaves basal, few to several, exceeding the spikelets. Spikelets densely clustered at ground level, easily overlooked owing to the leaf-like appearance of the bracts. All bracts usually fertile, sheathing and hyaline at the base,

produced above into long, green leaf-like tips which diminish in length from without inwards. Stamens usually 2, occasionally 3 in flowers at the base of the spikelet, anthers small at the time of dehiscence, much shorter than the filament. Style very short, with 2 long branches. Fruit dorsally compressed, pale brown, the surface somewhat rough with minute raised lumps in longitudinal rows.

Hab. Cape Peninsula : *Levy's* 7576. Ironstone gravel on flats between Maitland and Pinelands. (*Type*, in the Bolus Herbarium.)

Flowering season. Aug.—Sept.

This species is allied to *S. Hystrix* Thunb. from which it differs in the absence of visible peduncles, the much longer green tips of the bracts, the 2 style branches and the biconvex fruit.